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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

**MAR 28 2006**

Appellant:	Geile et al.	<b>Appeal Brief</b>
Serial No.	09/901,374	
Filing Date	July 9, 2001	
Group Art Unit	2683	
Examiner	William D. Cumming	
Attorney Docket No.	100.070US26	
Title: DYNAMIC ALLOCATION OF TRANSMISSION BANDWIDTH IN A COMMUNICATION SYSTEM		

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On November 28, 2005, Appellants filed a notice of appeal from the rejection of claims 2-12 set forth in the Final Office Action mailed June 29, 2005. This Appeal Brief is accompanied by a fee in the amount of \$500.00 as required under 37 C.F.R. §1.17(c).

This brief is also accompanied by a Petition, as well as the appropriate fee, to obtain a two-month extension of the period for filing the Appeal Brief, thereby moving the deadline for filing the brief from January 28, 2006 to March 28, 2006.

**1. Real Party Interest**

The real party in interest in the above-captioned application is the assignee ADC Telecommunications, Inc.

**2. Related Appeals and Interferences**

There are no other appeals or interferences known to the Appellants that will have a bearing on the Board's decision in the present appeal.

**3. Status of the Claims**

Claims 2-12 were rejected in a Final Office Action mailed June 29, 2005. The rejection of claims 2-12 is the subject of this appeal.

**4. Status of Amendments**

No amendment has been filed subsequent to the Final Office Action mailed June 29, 2005.

**5. Summary of claimed subject matter**

Pursuant to 37 C.F.R. §41.37(c)(1)(v), Applicant provides the following concise explanation of the subject matter defined in each independent claim with reference to the specification by page and line number and to the drawings by reference number.

Applicant submits that the citations to the specification and drawings are not intended to

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be exhaustive and that other support for the various claims may also be found throughout the specification and drawings.

A. Claim 2

Claim 2 is directed to a head end. The head end of claim 2 is described at least in the specification at p. 32, line 9 - p. 36, line 5; p. 40, line 12 - p. 43, line 17; p. 66, lines 4 - 23, p. 192, line 21 - p. 197, line 21 and is shown in Figures 1, 3, 8, and 59-67. The head end (32) includes at least one modem (82) for communicating with service units (100, 61, 68) over a transmission bandwidth, the transmission bandwidth being divided into a number of subbands, each subband including a plurality of payload channels and at least one control channel (Figures 63-67) and a control circuit (900), communicatively coupled with the at least one modem, that assigns each service unit to a subband such that the service units are substantially evenly distributed over the subbands.

B. Claim 3

Claim 3 is directed to a head end. The head end of claim 3 is described at least in the specification at p. 32, line 9 - p. 36, line 5; p. 40, line 12 - p. 43, line 17; p. 66, lines 4 - 23, p. 192, line 21 - p. 197, line 21 and is shown in Figures 1, 3, 8, and 59-67. The head end (32) includes at least one modem (82) for communicating with service units (100, 61, 68) over a transmission bandwidth, the transmission bandwidth being divided into a number of subbands, each subband including a plurality of payload channels and at least one control channel (Figures 63-67) and a control circuit (900), communicatively coupled with the at least one modem, that assigns each service unit to a subband such that the load of the service units is substantially evenly distributed over the subbands.

C. Claim 8

Claim 8 is directed to a head end. The head end of claim 8 is described at least in the specification at p. 32, line 9 - p. 36, line 5; p. 40, line 12 - p. 43, line 17; p. 66, lines 4 - 23, p. 192, line 21 - p. 197, line 21 and is shown in Figures 1, 3, 8, and 59-67. The head end (32) includes at least one modem (82) for communicating with service units

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(100, 61, 68) over a transmission bandwidth, the transmission bandwidth being divided into a number of subbands, each subband including a plurality of payload channels and at least one control channel (Figures 63-67) and a control circuit (900), communicatively coupled with the at least one modem, that assigns each service unit to a subband such that the service units are substantially evenly distributed over the subbands. Each subband includes a number of payload channels (Figure 59) that transmit data at a first rate and a control channel that transmits data at a second rate, the second rate being slower than the first rate.

**6. Grounds of rejection to be reviewed on appeal**

Whether claims 2-12 are obvious under 35 U.S.C. §103(a) over Thompson et al. (U.S. Patent No. 5,594,726) in view of Clark et al. (U.S. Patent No. 3,742,145)?

**7. Argument**

**A. Rejection of Claims under 35 U.S.C. § 103(a)**

**i. The Applicable Law**

35 U.S.C. § 103 provides in relevant part:

Conditions for patentability, non-obvious subject matter.

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

“The ultimate determination...whether an invention is or not obvious is a legal conclusion based on underlying factual inquiries including (1) the scope and content of the prior art; (2) the level of ordinary skill in the prior art; (3) the differences between the claimed invention and the prior art; and (4) the objective evidence of nonobviousness.” *In re Dembiczak*, 175 F.3d 994, 998, 50 USPQ2d 1614, 1616 (1999) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966)).

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When applying 35 U.S.C. §103(a), the claimed invention must be considered as a whole; the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination; the references must be viewed without the benefit of impermissible hindsight afforded by the claimed invention and a reasonable expectation of success is the standard with which obviousness is determined. *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of the ordinary skill in the art, to modify the reference or to combine teachings from multiple references. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP 2143.

The teaching or suggestions to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicant's disclosure. MPEP 2143 citing *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

## **ii. Rejection of claims 2-12**

The Examiner rejected claims 2-12 under 35 USC § 103(a) as being unpatentable over Thompson et al. (U.S. Patent No. 5,594,726) in view of Clark et al. (U.S. Patent No. 3,742,145).

### **a. Claim 2**

Claim 2 of the present application is an independent claim. Claim 2 is directed to a head end. The head end includes at least one modem for communicating with service units over a transmission bandwidth, the transmission bandwidth being divided into a number of subbands, each subband including a plurality of payload channels and at least one control channel and a control circuit, communicatively coupled with the at least one modem, that assigns each service unit to a subband such that the service units are substantially evenly distributed over the subbands.

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As indicated on pages 3 and 4 of Applicant's Amendment and Response dated April 1, 2005, Thompson et al. do not teach or suggest the head end of claim 2. Applicant respectfully contends that Thompson et al. *does* contain a headend (See Thompson et al., Col. 10, lines 40-43), however this head end does not appear in Figure 2 of Thompson et al. as suggested by the Examiner in the Office Action of November 21, 2004. Further, the head end of Thompson et al. does not meet the requirements of claim 2. In particular, Thompson et al. do not teach or suggest a head end with a control circuit that assigns each service unit to a subband such that the service units are substantially evenly distributed over the subbands as found in claim 2. There is no discussion in Thompson et al. of distributing service units over subbands or assigning service units to subbands as found in claim 2. In contrast, Thompson et al. describes "optical interface 40" which "allows an addressing and control unit 42 to *decode and strip overhead and framing bits from the signal*," "the output of the tuncr/demodulators 62 is 480 DS0 signals which are concentrated into groups of DS1 signals by a group of multiplexers 64 under the control of addressing and control unit 66," and "the addressing and control unit 66 adds the necessary control information in the optical transmitter 70 before communicating the digital DS1 signals in an optical format." Addressing and control unit 42 and addressing and control unit 66 are not part of a head end such as head end 14 and furthermore do not assign each service unit to a subband or assign each service unit to a subband such that the service units are substantially evenly distributed over the subbands or such that the load of the service units is substantially evenly distributed over subbands as found in claim 2. As a result, Thompson et al. do not anticipate the head end of claim 2.

Further, Applicant respectfully contends that the Examiner erred in concluding that "Applicant's attorney states there is no modem in Thompson et al." (See Final Office Action, page 5). Applicant respectfully asserts that the remarks on page 4 of Applicant's Amendment and Response dated April 1, 2005 indicate that in Thompson et al. "neither the modulator 48 nor the demodulator 62 reside within headend 14." It is not proper for the Examiner to exclude this limitation in rejecting claim 2. Applicant respectfully asserts that this limitation is not taught or suggested by Thompson et al.

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Still further, the Examiner correctly indicates that Thompson et al. do not disclose each subband including a plurality of payload channels and at least one control channel as found in claim 2. The Examiner asserts that Clark et al. is evidence that subbands having a number of payload channels and a control channel in each subband is about 32 year old subject matter and well known in the art. The Examiner takes Official notice as such and asserts that the evidence shows that the Applicants did not invent subbands having a number of payload channels and a control channel in each subband.

Applicant respectfully contends that Clark et al. do not overcome the deficiencies of Thompson et al. and neither Thompson et al. nor Clark et al., alone or in combination, teach or suggest the head end of claim 2. As indicated on page 5 of Applicant's Amendment and Response filed April 1, 2005, Applicant respectfully asserts that the Examiner *still* has not provided a basis for his assertion that Clark et al. teaches or suggests each subband including a plurality of payload channels and at least one control channel as found in claim 2. Therefore, Applicant respectfully contends that there is *still* no basis for a rejection or the taking of Official notice based on Clark et al. (*See* Final Office Action, page 3).

In particular, the Examiner provides no motivation either in the references or in art to combine the frequency agile broadband communications system of Thompson et al. with the asynchronous time division multiplexer and demultiplexer of Clark et al. (*See* respective Abstracts). Applicant finds no reasonable expectation of success in combining these references. Further, Applicant does not find that Clark et al. teaches or suggests each subband including a plurality of payload channels as found in claim 2. In contrast, Clark et al. discusses an asynchronous time division multiplexer and demultiplexer and timing signals generated from a reference oscillator that define the synchronous data format from which includes 64 midframes within a superframe with each of the midframes including 15 subframes. Odd numbered ones of the subframes include 9 data bits and even numbered ones of the subframes include 8 data bits. The 9<sup>th</sup> data bit of the odd numbered subframes provide an overhead channel from transmitting digital voice order wire, digital data order wire, control words, a "zero" short synch bit, a "one" short

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synch bit and a long sync bit in each midframe. (See Clark et al., Abstract) There is no discussion of subbands and payload channels as the Examiner suggests. Applicant asserts that even if the two references could be combined that they do not teach or suggest the head end of claim 2.

Accordingly, it is respectfully submitted that the Examiner erred in rejecting claim 2 of the present application under 35 USC § 103(a). Reversal of the rejection is respectfully requested.

Claim 3 of the present application is an independent claim. Claim 3 is directed a machine-usable medium having machine-readable instructions stored thereon for execution by a processor of a telecommunications management device to perform a method. The Examiner rejected claim 3 on the same basis as claim 2. Therefore, the arguments set forth above with respect to claim 2 apply to claim 3 as well.

Accordingly, it is respectfully submitted that the Examiner erred in rejecting claim 3 of the present application under 35 USC § 103(a). Reversal of the rejection is respectfully requested.

Claims 4-7 of the present application ultimately depend from claim 3 and therefore the arguments set forth above with respect to claim 3 apply to these claims as well.

Accordingly, reversal of the rejection of claims 4-7 under 35 U.S.C. §103(a) is respectfully requested.

**b. Claim 8**

Claim 8 of the present application is an independent claim. Claim 8 is directed to a head end. The head end includes at least one modem for communicating with service units over a transmission bandwidth, the transmission bandwidth being divided into a number of subbands, each subband including a plurality of payload channels and at least one control channel and a control circuit, communicatively coupled with the at least one modem, that assigns each service unit to a subband such that the service units are



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substantially evenly distributed over the subbands. Each subband includes a number of payload channels that transmit data at a first rate and a control channel that transmits data at a second rate, the second rate being slower than the first rate.

The Examiner rejected claim 8 on the same basis as claims 2 and 3. Therefore, the arguments set forth above with respect to claims 2 and 3 apply to claim 8 as well.

Further, there is no discussion in the references of payload channels that transmit data at a first rate and a control channel that transmits data at a second rate as found in claim 8, and, resultantly, no discussion of the second rate being slower than the first rate. In particular, the Examiner does not address these limitations of claim 8 as argued on page 6 of Applicant's Amendment and Response filed April 1, 2005.

Accordingly, it is respectfully submitted that the Examiner erred in rejecting claim 8 of the present application under 35 USC § 103(a). Reversal of the rejection is respectfully requested.

Claims 9-12 of the present application ultimately depend from claim 8 and therefore the arguments set forth above with respect to claim 8 apply to these claims as well.

Accordingly, reversal of the rejection of claims 9-12 under 35 U.S.C. §103(a) is respectfully requested.

Date: March 28, 2006

Respectfully submitted,



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## CLAIMS APPENDIX

2. A head end comprising:  
at least one modem for communicating with service units over a transmission bandwidth, the transmission bandwidth being divided into a number of subbands, each subband including a plurality of payload channels and at least one control channel; and  
a control circuit, communicatively coupled with the at least one modem, that assigns each service unit to a subband such that the service units are substantially evenly distributed over the subbands.
3. A head end comprising:  
at least one modem for communicating with service units over a transmission bandwidth, the transmission bandwidth being divided into a number of subbands, each subband including a plurality of payload channels and at least one control channel; and  
a control circuit, communicatively coupled with the at least one modem, that assigns each service unit to a subband such that the load of the service units is substantially evenly distributed over the subbands.
4. The head end of claim 3, wherein the control circuit selectively assigns each service unit based on at least an expected load on a control channel in a subband.
5. The head end of claim 3, wherein the control circuit selectively assigns each service unit based on at least an expected load for the service units.
6. The head end of claim 3, wherein the control circuit is further operable to allocate a payload channel to a service unit in response to a request for bandwidth for the service unit.
7. The head end of claim 3, wherein the control circuit is operable to assign a number of service units to each subband for selective use of the payload channels in the

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subband by the service units so as to increase the number of service units that can be coupled to a communication system.

8. A head end comprising:

at least one modem for communicating with service units over a transmission bandwidth, the transmission bandwidth being divided into a number of subbands, each subband including a plurality of payload channels and at least one control channel;

a control circuit, communicatively coupled with the at least one modem, that assigns each service unit to a subband such that the service units are substantially evenly distributed over the subbands; and

wherein each subband includes a number of payload channels that transmit data at a first rate and a control channel that transmits data at a second rate, the second rate being slower than the first rate.

9. The head end of claim 8, wherein the control circuit selectively assigns each service unit based on at least an expected load on a control channel in a subband.

10. The head end of claim 8, wherein the control circuit selectively assigns each service unit based on at least an expected load for the service units.

11. The head end of claim 8, wherein the control circuit is further operable to allocate a payload channel to a service unit in response to a request for bandwidth for the service unit.

12. The head end of claim 8, wherein the control circuit is operable to assign a number of service units to each subband for selective use of the payload channels in the subband by the service units so as to increase the number of service units that can be coupled to a communication system.

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EVIDENCE APPENDIX

There is nothing to present in the Evidence Appendix.

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RELATED PROCEEDINGS APPENDIX

There is nothing to present in the Related Proceedings Appendix.